The economics of risk and time
Prof. Christian Gollier
NAKE workshop, Wageningen, 10-14 December

Reading list:

Gollier, C., (2001), *The economics of risk and time*, MIT Press, Cambridge.

Course outline:

Uncertainty is everywhere. There is no field in economics in which risk is not a dimension of the decision-making environment. The theory of finance provides the most obvious example of this. Similarly, most recent developments in macroeconomics have been made possible by recognizing the importance of risk in explaining individual decisions. Consumption patterns, investments and labor decisions can only be understood completely if uncertainty is taken into account into the decision-making process. Environmental economics provides another illustration. Public opinion is now very sensitive to the presence of potentially catastrophic risks related, for example, to the greenhouse effect and genetic manipulations. Environmental economists introduced probabilistic scenarios in their models to exhibit socially efficient levels of prevention efforts. Finally, the extraordinary contributions of asymmetric information to game theory have reinforced interest in uncertainty among economists.

We are lucky enough to have a well-accepted and unified framework to introduce uncertainty in economic modelling. John von Neumann and Oskar Morgenstern, in the mid-forties developed the expected utility theory building on Daniel Bernoulli's idea that agents facing risk maximize the expected value of the utility of their wealth. Expected utility theory (EU) is now fifty years old. It is a ubiquitous instrument in economic modeling. Most economists recognize that the theory has been very useful for explaining the functioning of our economies. The aim of this course is to provide a detailed and unified analysis of the implications of the expected utility model to the economic theory.

The course will provide an overview of the most recent developments in expected utility theory. It is aimed at any audience that is interested in problems related to efficient/optimal public/private strategies for dealing with risk. The course heavily relies on concepts that are standard in the theory of finance. But most findings presented in the course are useful for our understanding of various economic problems ranging from macroeconomic fluctuations to global warming.

The following tentative program could be modified if requested by the audience.

PROGRAM

1. First lecture: Background *(Chap. 2, 4,6)*
   - Risk aversion and risk premium
   - The standard portfolio problem and its comparative statics
   - The equity premium puzzle
   - A simple separation theorem

2. Second lecture: Interaction between independent risks *(Chap. 9,11)*
   - The tempering effect of background risk
   - Risk taking and the time horizon
   - Predictability

3. Third lecture: Risk and time in economic theory *(Chap 13, 14, 15, 16)*
   - The demand for contingent claims
   - Consumption under certainty
   - Precautionary saving and prudence
   - Efficient discount rates

4. Fourth lecture: Equilibrium prices of risk and time *(Chap. 21, 22,23)*
   - Efficient risk sharing
   - Searching for the representative agent

5. Fifth lecture: Extensions